

Fig.1
 (PRIOR ART)

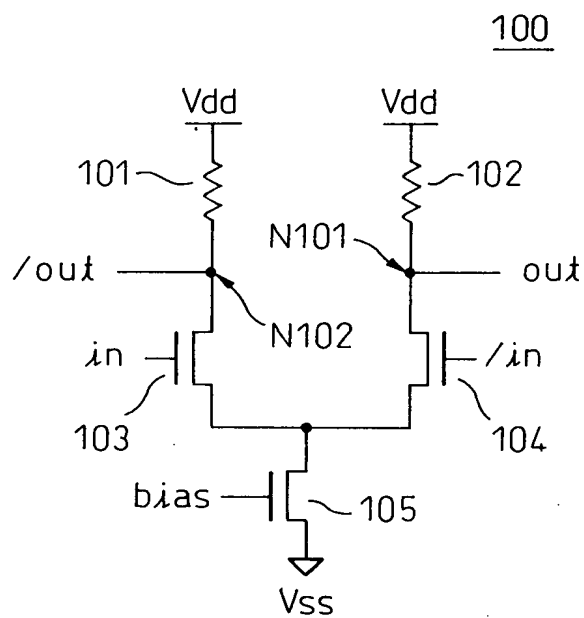
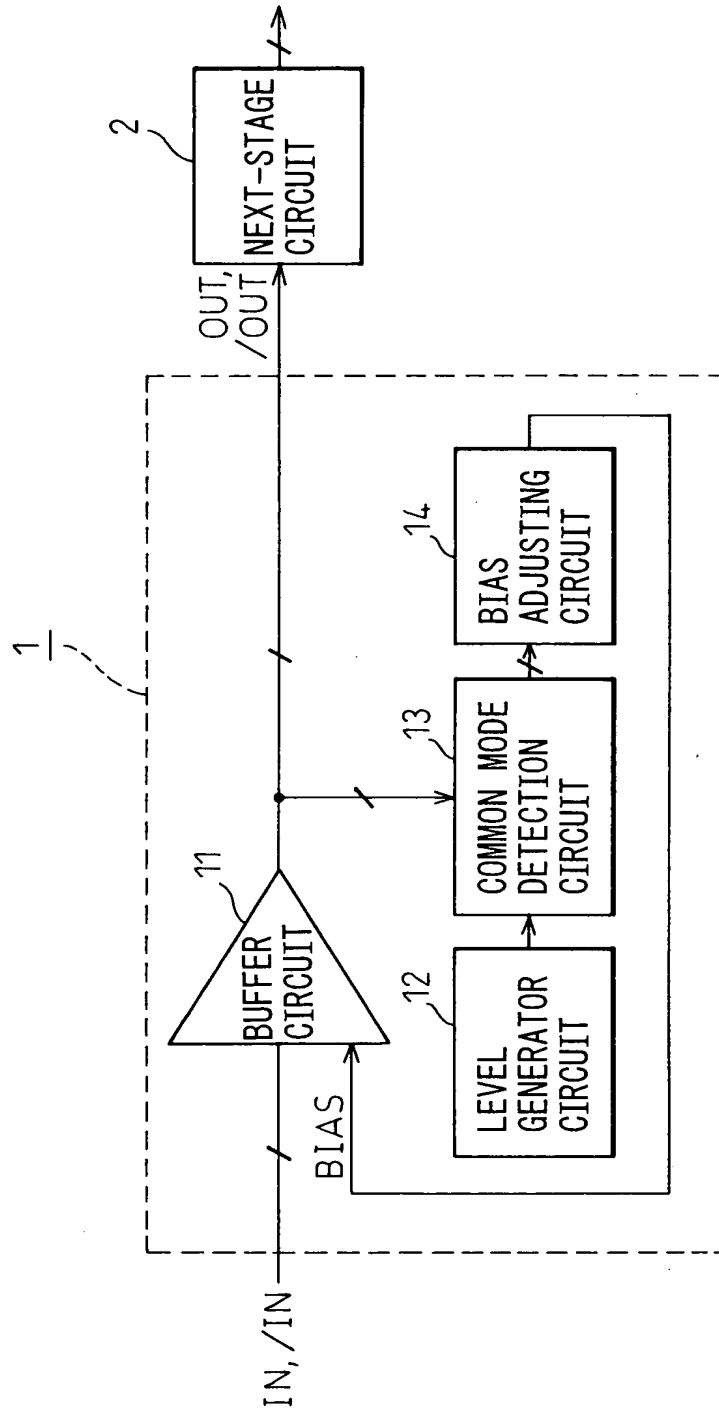


Fig.2



The circuit diagram illustrates a differential amplifier (1) with a variable gain control circuit (2). The differential amplifier (1) consists of a first differential pair (11) with input nodes IN and /IN, and a second differential pair (12) with input nodes VCN and /VCN. The first differential pair (11) has a common source node connected to a BIAS input and a tail current source (115). The second differential pair (12) has a common source node connected to a tail current source (127). The output nodes of the first differential pair (11) are OUT and /OUT, which are connected to the input nodes of the second differential pair (12) through resistors 131 and 132. The output nodes of the second differential pair (12) are connected to a common output node through resistors 133 and 134. A feedback network (13) is connected between the output node and the BIAS input, consisting of a resistor (131) and a capacitor (132) in parallel. A variable gain control circuit (2) is connected to the BIAS input and the output node. It includes a differential pair (21) with input nodes VDD and VSS, and a tail current source (25). The output of the differential pair (21) is connected to the BIAS input through a resistor (23). The output of the tail current source (25) is connected to the output node through a resistor (24). The variable gain control circuit (2) also includes a differential pair (22) with input nodes VDD and VSS, and a tail current source (26). The output of the differential pair (22) is connected to the output node through a resistor (23). The output of the tail current source (26) is connected to the output node through a resistor (24).

Fig. 4

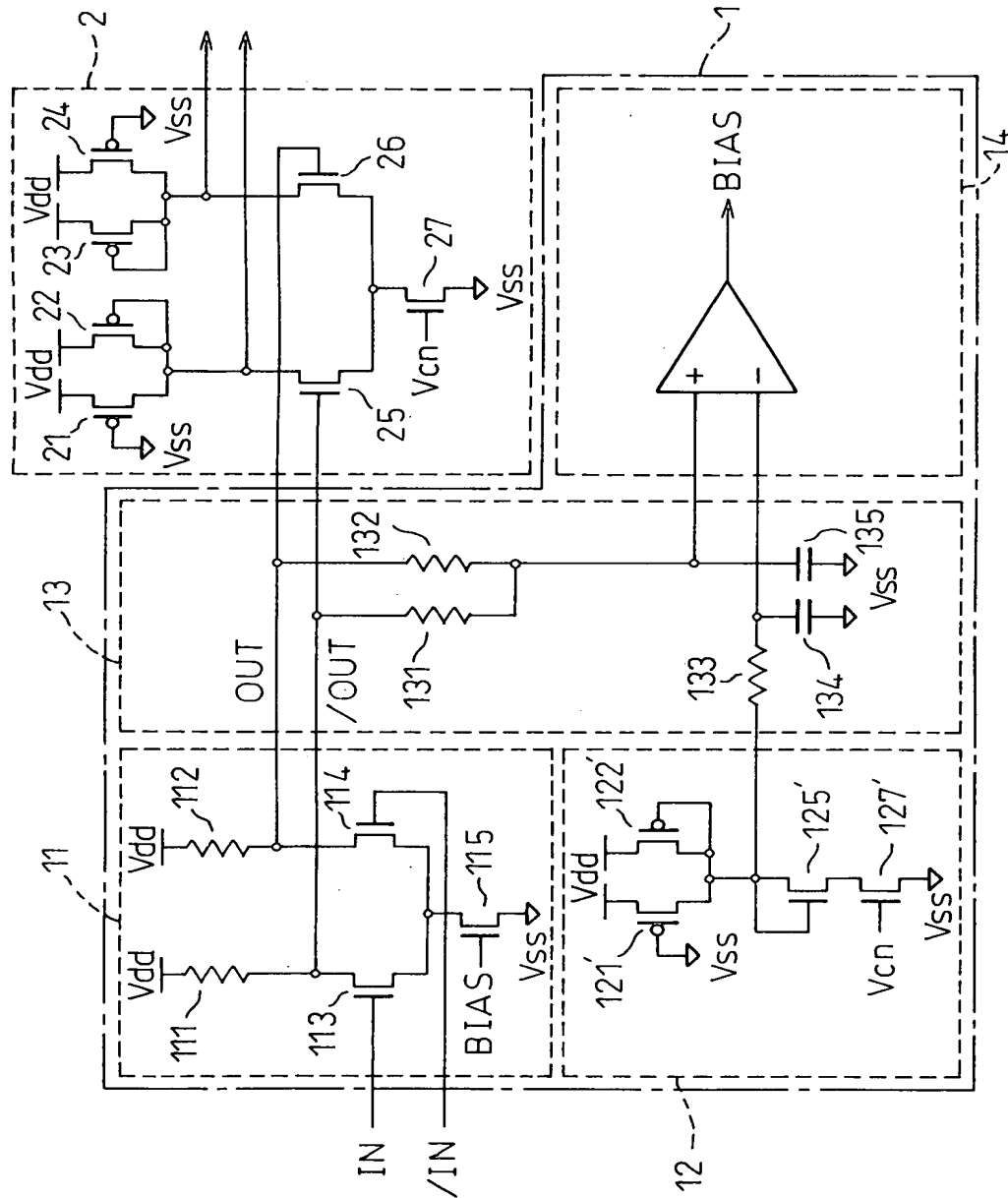


Fig.5

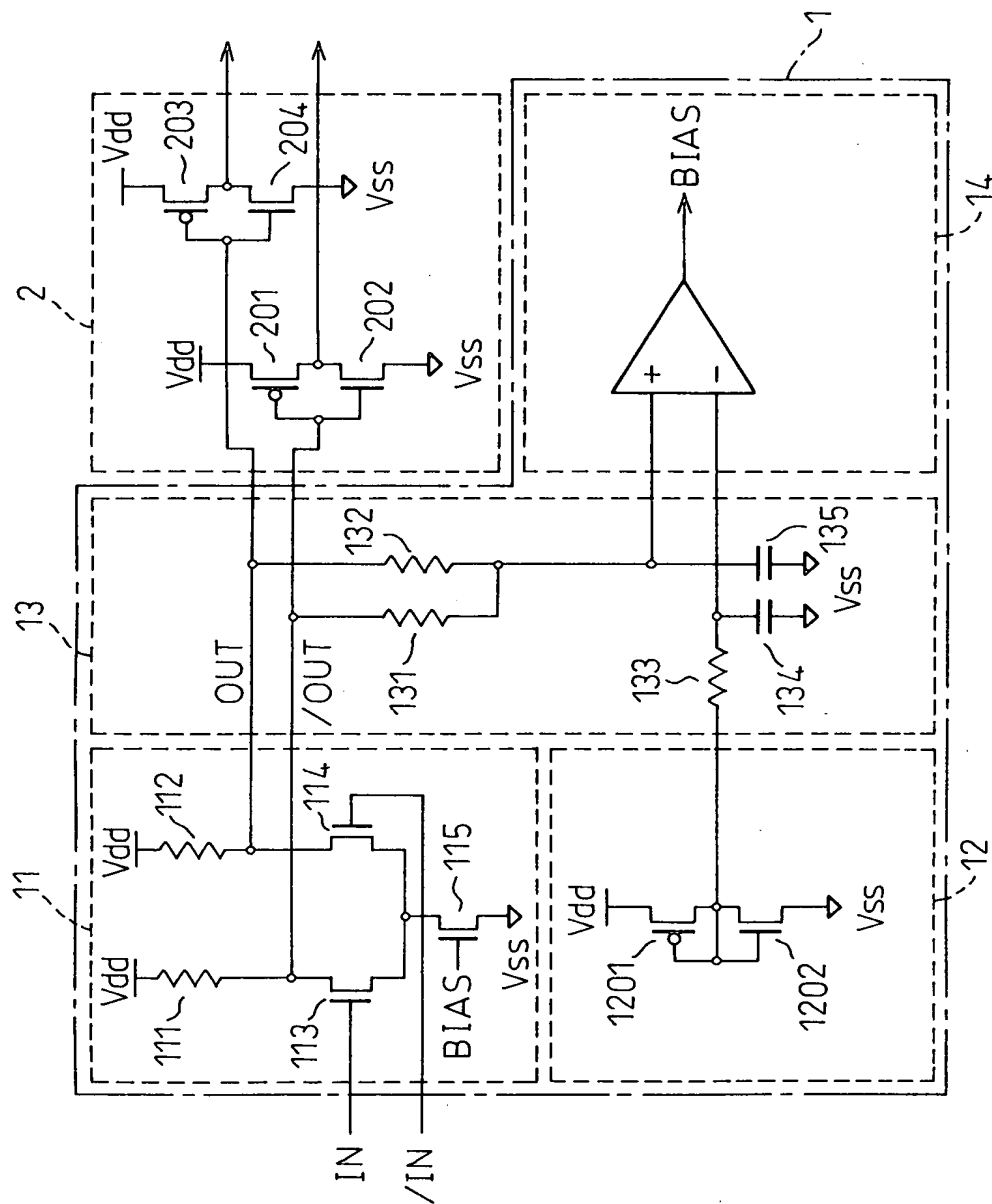


Fig.6

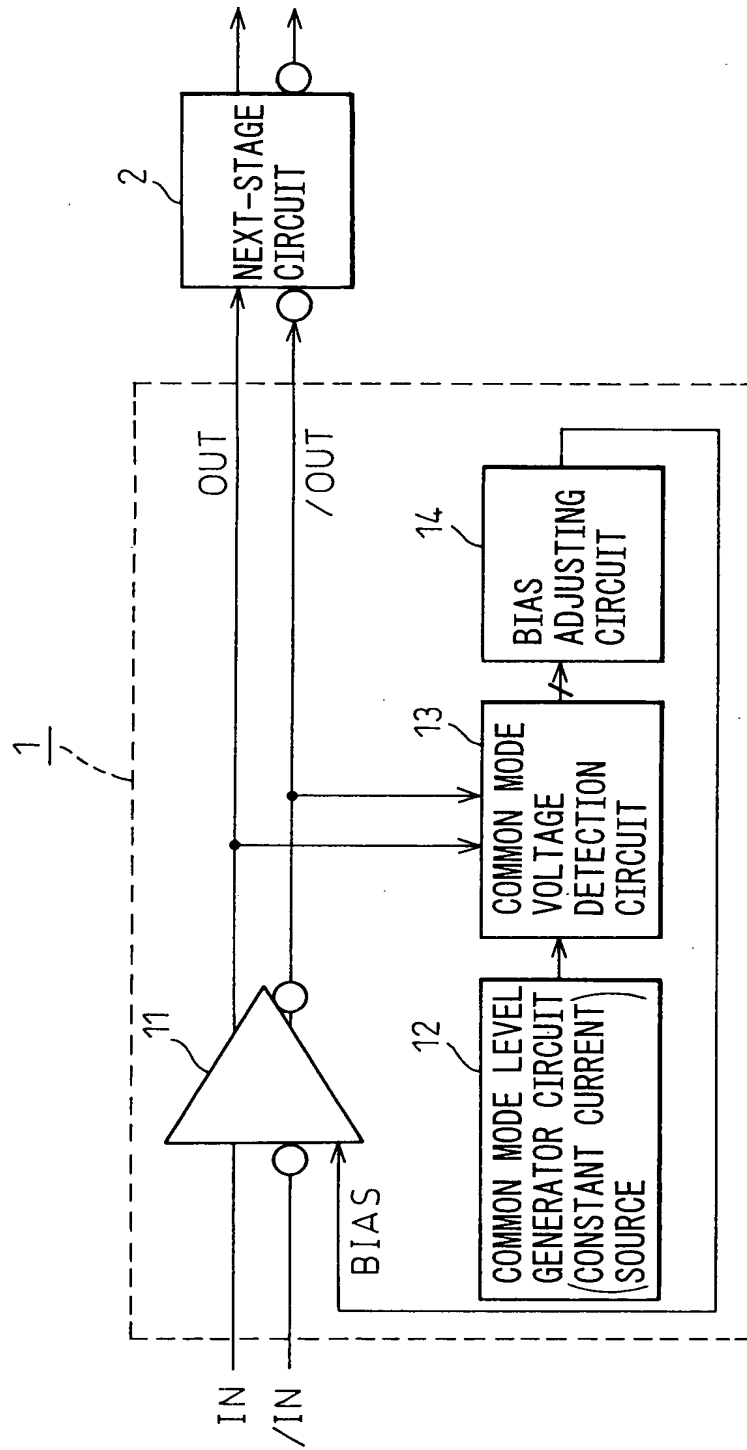


Fig.7

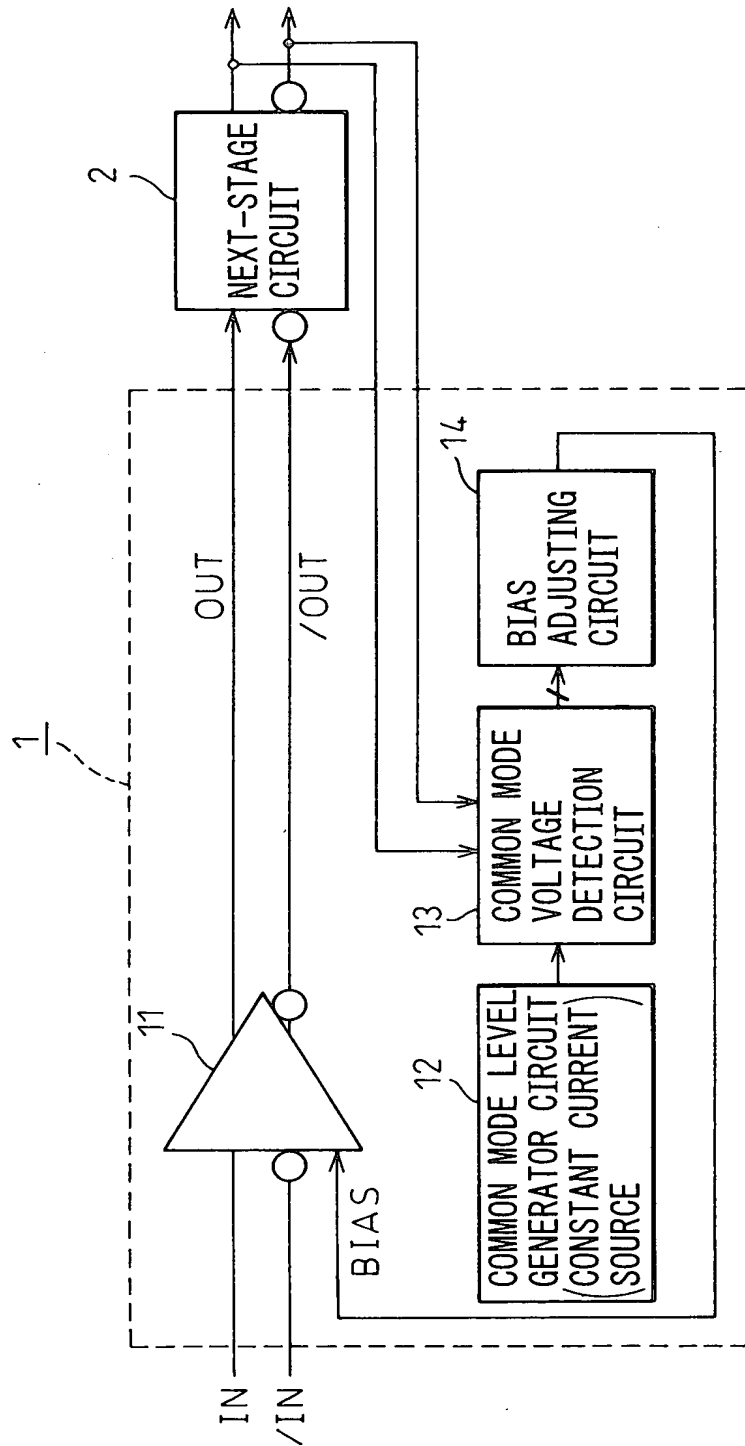


Fig.8

